

Claims

What is claimed is:

1. A coupler for coupling conduit comprising:

a first arcuate coupling member and a second arcuate coupling member hingingly attached each to one end of the other at a hinge region;

a first cooperating attaching component attached to an outer end of said first arcuate coupling member opposite said hinge region; and

a second cooperating attaching component attached to an outer end of said second arcuate coupling member opposite said hinge region; and

wherein coupler is wrappable around adjacent ends of aligned conduit and said first and said second cooperating attaching components are attachable each to the other, thereby closing said coupler and securing the adjacent ends of aligned conduit together in fluid flow communication.

2. The coupler of claim 1 wherein said first arcuate coupling member comprises:

a plurality of corrugations in the walls of said first arcuate coupling member, said corrugations located and spaced to fit within and mate or interfit with (at least one) corrugation of corrugated conduit if corrugated conduit is being connected. *yes*

3. The coupler of claim 1 wherein said second arcuate coupling member comprises:

a plurality of corrugations in the walls of said second arcuate coupling member, said corrugations located and spaced to fit within and mate or interfit with (at least one) corrugation of corrugated conduit if corrugated conduit is being connected. *yes*

4. The coupler of claim 1 wherein said first cooperating attaching component comprises:

a plurality of dents, detents, scorings, or ridges located thereon.

5. The coupler of claim 4 wherein said second cooperating attaching component comprises:

a plurality of dents, detents, scorings, or ridges located thereon which cooperate with said dents, detents, scorings or ridges of said first cooperating attaching component to close and secure said coupler in a closed position.

6. The coupler of claim 5 wherein the geometry of said pluralities of dents, detents, scorings, or ridges of each of said first and said second cooperating attaching components is such that said first and said second cooperating attaching components are irreversibly attachable once attached each to the other such that said coupler is not reusable.

7. The coupler of claim 5 wherein the geometry of said pluralities of dents, detents, scorings, or ridges of each of said first and said second cooperating attaching components is such that said first and said second cooperating attaching components are detachable each from the other such that said coupler is reusable.

8. The coupler of claim 1 wherein the inside diameter of said coupler is about equal to or slightly greater than the outside diameter of conduit being coupled by said coupler.

9. The coupler of claim 1 comprising:

an elastic material disposed on the interior surface of each said first and said second arcuate coupling member of said coupler, which said elastic material is compressable against the outer surface of the conduits being coupled, to enhance the seal made by said coupler.

10. The coupler of claim 1 comprising:

a means for regulating the amount of flex permitted of said first cooperating attaching component comprising:

a bump or ridge which contacts a stopping surface if said first cooperating attaching component is bent past alignment with a tangent to said outer end of said first arcuate coupling member.

11. The coupler of claim 1 comprising:

a means for regulating the amount of flex permitted at said hinge region comprising:  
a bump or ridge which contacts a stopping surface to prevent excessive flexing of said hinge region.

12. The coupler of claim 1 wherein said first arcuate coupling member comprises:

a plurality of perforations in the wall of said first arcuate coupling member, wherein said plurality of perforations is located and spaced to mate or interfit with perforations of perforated conduit if perforated conduit is being connected.

13. The coupler of claim 1 wherein said second arcuate coupling member comprises:

a plurality of perforations in the wall of said second arcuate coupling member, wherein said plurality of perforations is located and spaced to mate or interfit with perforations of perforated conduit if perforated conduit is being connected.

14. The coupler of claim 2 further comprising:

a plurality of perforations in said plurality of corrugations, wherein said plurality of perforations is located and spaced to mate or interfit with perforations of perforated conduit if perforated conduit is being connected.

15. The coupler of claim 3 further comprising:

a plurality of perforations in said plurality of corrugations, wherein said plurality of perforations is located and spaced to mate or interfit with perforations of perforated conduit if perforated conduit is being connected.

16. A coupler for coupling corrugated conduit comprising:

a first arcuate coupling member and a second arcuate coupling member hingingly attached each to one end of the other at a hinge region;

a first cooperating attaching component attached to an outer end of said first arcuate coupling

member opposite said hinge region; and

a second cooperating attaching component attached to an outer end of said second arcuate coupling member opposite said hinge region;

a plurality of corrugations in the wall of said first arcuate coupling member, and a plurality of corrugations in the wall of said second arcuate coupling member, said corrugations of said first and said second arcuate coupling members located and spaced to fit within and mate or interfit with (at least one) corrugation of corrugated conduit (if corrugated conduit is being connected); and wherein coupler is wrappable around adjacent ends of aligned conduit and said first and said second cooperating attaching components are attachable each to the other, thereby closing said coupler and securing the adjacent ends of aligned conduit together in fluid flow communication.

17. The coupler of claim 16 wherein said first cooperating attaching component comprises:

a plurality of dents, detents, scorings, or ridges located thereon.

18. The coupler of claim 17 wherein said second cooperating attaching component comprises:

a plurality of dents, detents, scorings, or ridges located thereon which cooperate with said dents, detents, scorings or ridges of said first cooperating attaching component to close and secure said coupler in a closed position.

19. The coupler of claim 18 wherein the geometry of said pluralities of dents, detents, scorings, or ridges of each of said first and said second cooperating attaching components is such that said first and said second cooperating attaching components are irreversibly attachable once attached each to the other such that said coupler is not reusable.

20. The coupler of claim 18 wherein the geometry of said pluralities of dents, detents, scorings, or ridges of each of said first and said second cooperating attaching components is such that said first and said second cooperating attaching components are detachable each from the other such that said coupler is reusable.

21. The coupler of claim 16 wherein the inside diameter of said coupler is about equal to or slightly greater than the outside diameter of conduit being coupled by said coupler.

22. The coupler of claim 16 comprising:

an elastic material disposed on the interior surface of each said first and said second arcuate coupling member of said coupler, which said elastic material is compressible against the outer surface of the conduits being coupled, to enhance the seal made by said coupler.

23. The coupler of claim 16 comprising:

a means for regulating the amount of flex permitted of said first cooperating attaching component comprising:

a bump or ridge which contacts a stopping surface if said first cooperating attaching component is bent past alignment with a tangent to said outer end of said first arcuate coupling member.

24. The coupler of claim 16 comprising:

a means for regulating the amount of flex permitted at said hinge region comprising:

a bump or ridge which contacts a stopping surface to prevent excessive flexing of said hinge region.

25. The coupler of claim 16 comprising:

a plurality of perforations in said plurality of corrugations in said first and said second arcuate coupling members wherein said plurality of perforations is located and spaced to mate or interfit with perforations of perforated conduit if perforated conduit is being connected.

26. A coupler for coupling conduit in end to end flow communication comprising:

a single coupling member having a length, a width, and an inner surface defined by an arc of a variable but predetermined number of degrees, which number of degrees is determinable as a function of the diameter of conduit to be coupled;

a first cooperating attaching component at a first end of said coupling member;

a second cooperating attaching component at a second end of said coupling member, wherein said first and said second cooperating attaching components of different said single coupling members are attachable each to the other such that any required number of said single coupling members are attachable together end to end to form said coupler around any diameter conduit.

27. The coupler of claim 26 wherein said single arcuate coupling member further comprises:

a plurality of corrugations in the walls of said single arcuate coupling member, said corrugations located and spaced to fit within and mate or interfit with at least one corrugation of corrugated conduit if corrugated conduit is being connected.

28. The coupler of claim 26 wherein said first cooperating attaching component comprises:

a plurality of dents, detents, scorings, or ridges located thereon.

29. The coupler of claim 28 wherein said second cooperating attaching component comprises:

a plurality of dents, detents, scorings, or ridges located thereon which cooperate with said dents, detents, scorings or ridges of said first cooperating attaching component to securely attach each said single coupling member to another said single coupling member, and to securely close said coupler formed from multiple said single coupling members in a closed position around conduit coupled by said coupler.

30. The coupler of claim 29 wherein the geometry of said pluralities of dents, detents, scorings, or ridges of each of said first and said second cooperating attaching components is such that said first and said second cooperating attaching components are irreversibly attachable once attached each to the other such that each said single coupling member and said coupler formed therefrom is not reusable.

31. The coupler of claim 29 wherein the geometry of said pluralities of dents, detents, scorings, or ridges of each of said first and said second cooperating attaching components is such that said first

and said second cooperating attaching components are detachable each from the other such that each said single coupling member and said coupler formed therefrom is reusable.

32. The coupler of claim 26 wherein the inside diameter of said coupler, once formed, is about equal to or slightly greater than the outside diameter of conduit being coupled by said coupler.

33. The coupler of claim 26 comprising an elastic material disposed on the interior surface of each said single coupling member of said coupler which said elastic material is compressable against the outer surface of the conduits being coupled, to enhance the seal made by said coupler.

34. The coupler of claim 26 comprising:

a means for regulating the amount of flex permitted of said first cooperating attaching component comprising:

a bump or ridge which contacts a stopping surface if said first cooperating attaching component is bent past alignment with a tangent to said outer end of said first arcuate coupling member.

35. The coupler of claim 26 comprising:

a plurality of perforations in the wall of each said single coupling member wherein said plurality of perforations is located and spaced to mate or interfit with perforations of perforated conduit if perforated conduit is being connected.

36. The coupler of claim 27 comprising:

a plurality of perforations in said plurality of corrugations of each said single coupling member wherein said plurality of perforations is located and spaced to mate or interfit with perforations of perforated conduit if perforated conduit is being connected.

37. A coupler for coupling smooth-walled conduit comprising:

a first arcuate coupling member and a second arcuate coupling member hingingly attachable

each to one end of the other at a hinge region;

a first cooperating attaching component attached to an outer end of said first arcuate coupling member opposite said hinge region; and

a second cooperating attaching component attached to an outer end of said second arcuate coupling member opposite said hinge region; and

wherein coupler is wrappable around adjacent ends of aligned conduit and said first and said second cooperating attaching components attach each to the other and thereby close said coupler and secure the adjacent ends of aligned conduit together in fluid flow communication.

38. The coupler of claim 37 comprising:

at least one engaging element protruding inwardly from the inner surface of each of said first and said second arcuate coupling members wherein said at least one engaging element engages with at least one cooperating engaging channel formed on the outer surface of said smooth-walled conduit, each said at least one cooperating engaging channel appropriately positioned from each end of said smooth-walled conduits being joined, for engaging with said at least one engaging element on said first and said second arcuate coupling members.

39. The coupler of claim 38 wherein said engaging element comprises: a ridge.

40. The coupler of claim 3 wherein said first cooperating attaching component comprises:

a plurality of dents, detents, scorings, or ridges located thereon.

41. The coupler of claim 40 wherein said second cooperating attaching component comprises:

a plurality of dents, detents, scorings, or ridges located thereon which cooperate with said dents, detents, scorings or ridges of said first cooperating attaching component to close and secure said coupler in a closed position.

42. The coupler of claim 41 wherein the geometry of said pluralities of dents, detents, scorings, or ridges of each of said first and said second cooperating attaching components is such that said first



and said second cooperating attaching components are irreversibly attachable once attached each to the other such that said coupler is not reusable.

43. The coupler of claim 41 wherein the geometry of said pluralities of dents, detents, scorings, or ridges of each of said first and said second cooperating attaching components is such that said first and said second cooperating attaching components are detachable each from the other such that said coupler is reusable.

44. The coupler of claim 37 wherein the inside diameter of said coupler is about equal to or slightly greater than the outside diameter of conduit being coupled by said coupler.

45. The coupler of claim 37 comprising an elastic material disposed on the interior surface of each of said first and said second arcuate coupling members of said coupler which said elastic material is compressible against the outer surface of said smooth-walled conduits being coupled, to enhance the seal made by said coupler.

46. The coupler of claim 37 comprising:

a means for regulating the amount of flex permitted of said first cooperating attaching component comprising:

a bump or ridge which contacts a stopping surface if said first cooperating attaching component is bent past alignment with a tangent to said outer end of said first arcuate coupling member.

47. The coupler of claim 37 comprising:

a means for regulating the amount of flex permitted at said hinge region comprising:

a bump or ridge which contacts a stopping surface to prevent excessive flexing of said hinge region.

48. The coupler of claim 37 comprising:

49. The coupler of claim 37 comprising:

Add  $A_1$   $\rightarrow$